



1791 Tullie Circle, N.E. / Atlanta, GA 30329  
404-636-8400

TC/TG/TRG MEETING MINUTES

TC/TG/TRG NO. (TITLE): TC 5.9 Enclosed Vehicular Facilities  
DATE/TIME OF MEETINGS: June 18, 2020 10 AM- 1 PM EDT  
LOCATION: Microsoft Teams online meeting

1. The Chair, Jane Miller, called the meeting to order at approximately 10:00 AM.
2. Identification of Voting Members. There were 6 of 8 voting members present, which met requirements for a quorum.

Jane Miller – Chair

Yoon Ko – Programs S/C Chair

James McCarron

Bill Lampkin

Matt Davy – Secretary

David Hahm – Research S/C Chair

Duncan Phylfe

Tom O'Dwyer

3. Approval Minutes of Last Meeting: TC 5.9 in Orlando February 4, 2020 motion/seconded (approved)
4. Reminder about Code of Conduct
5. Chairman's Remarks – Jane Miller
  - 5.1. Breakfast meeting
  - 5.2. Join ASHRAE virtual conference
  - 5.3. Virtual research subcommittee meeting
  - 5.4. Seminar sponsored by TC5.9
6. Section Head Report (Larry Smith) – remarks; last meeting; unknown who is the next SH.
7. Subcommittee Reports
  - 7.1. Research Subcommittee (David Hahm) – see attached for subcommittee report
    - FWHA research project update later in program
    - List of projects on Basecamp
    - PIARC is looking at similar research on alternative vehicles (Norris Harvey)
  - 7.2. Programs Subcommittee (Yoon Ko) – see attached for sub-committee report
    - Seminar 43 – design considerations for tunnel ventilation systems; 3 speakers; available on virtual conference; 20 minutes live Q&A on 6/29 at 9am
    - Chicago (Jan 2021) – conference paper session; 3 abstracts submitted; Igor to chair; other programs due 8/3
    - No details on future schedules/tracks
    - Phoenix (Jun 2021)?
  - 7.3. Handbook Subcommittee (Andrew Louie)
    - No status update; need to schedule meeting; monthly progress meetings, and rotating schedule
    - Opportunities to update handbook
    - Meeting one month from today (mid-July) for one hour
  - 7.4. Standards Subcommittee (Yuan Li)
    - SPC217 – public comments received
  - 7.5. Webmaster (Simona Tsvetkova)
    - No status update; contact Simona with any updates

8. Liaison Reports

- TC 5.1 (Aresh Raychaudhuri) – no update
- TC 5.6 (Yoon Ko) – RP-1644 long atrium update (website); John Klote smoke control course?
- NFPA 130 (Andrew Louie) – task groups started (wires and cables); comments due end of the month
- NFPA 502 (Igor Maevski) – comments due end of the month
- PIARC (Ahmed Kashef) – no further comments; growing interest in alternative fuels

9. Old Business

- January conference should be in-person (Chicago)

10. New Business and Comments

- Comments from Jane about reorg; handbook
- All this is Michael Feuser and I am with TCF Clarage. I also am the chair for the AMCA committee for the review of the AMCA standard 250 factory testing of Jet fans. We have a teams meeting scheduled for June 26TH at 10:00. Any one interested in attending please send me an e-mail - Mfeuser@clarage.com

11. Next meeting scheduled for Chicago, IL -- Tuesday, January 26,2021

12. Meeting Adjournment – motion by Greg

13. Submitted by Matt Davy, Secretary – TC 5.9

**SPECIAL PROGRAM 11:30 am** – see Research Sub-Committee Report for discussion notes

**Research Update - FHWA Research Project: Fixed Fire Fighting Systems and Emergency Ventilation for Highway Tunnels**

<b>Purpose</b>	<b>ASHRAE TC 5.9 - Main Meeting - Research SC Minutes</b>		
<b>Project</b>		<b>Project No.</b>	
<b>Prepared by</b>	David Hahm	<b>Phone No.</b>	646-908-6651
<b>Location</b>	Web Conference	<b>Date/Time</b>	June 18, 2020, 10AM ET to 1PM ET
<b>Participants</b>	TC 5.9, Stephen Bartha (FHWA), Guests		
<b>Distribution</b>	TC 5.9		
<b>Attachment:</b>	-		

Notes	Action
<p>1 PIARC is also looking into alternate propulsion - Peter Sturm – Opportunity for co-sponsorship</p> <p>Norris Harvey and Ahmed Kashef are corresponding members for PIARC</p>	David to reach out to Norris for contact information for Peter Sturm and to get in contact.
<p>2 LEED requirement/certification for station design based on ASHRAE 90.1 - Mohammad Tabarra original author of previous RTAR. Will work with Matt and Jarrod Alston to resurrect.</p>	David to reach out to RAC for copy of previous RTAR.
<p>3 High Speed Pressure Transients – Previous RTAR sent to Andrew Louie and uploaded to Basecamp</p> <p><b>Discussion with FHWA – FFFS-EVS Research Project</b></p>	
<p>4 Stephen Bartha – representative for FHWA. Involved in bridge and tunnel inspection, tunnel inspection program. Filling role that Bill Bergeson held for the FFFS-EVS project.</p>	
<p>5 Not much progress has been made since the January workshop.</p>	
<p>6 The workshop report is being reviewed internally (Undergoing DOT 508 compliance). Cannot distribute material until 508 compliance is completed</p>	
<p>7 Next 3 tasks have been awarded</p> <ul style="list-style-type: none"> <li>• CFD</li> <li>• Laboratory tests</li> <li>• Summary Report</li> </ul>	



## Meeting Minutes

ASHRAE TC 5.9 - Main Meeting - Research SC Minutes  
June 18, 2020, 10AM ET to 1PM ET

- 8 Have not awarded full-scale task due to funding at this time.
- 9 FHWA will develop a review panel for the next phases. Looking to reduce the number of people compared to the workshop.
- Discussion with FHWA – NTIS Tunnel Inspection**
- 10 NTIS Tunnel inspection program was copied from bridge inspection
- 11 Need to include history of maintenance and repairs for equipment.
- 12 Not expecting revision anytime soon
- 13 FHWA asked/will ask owners to develop tunnel specific procedures
- 14 Did not want to develop bare minimum because of diversity of tunnels and their systems
- 15 TC has opportunity to develop RTAR in conjunction with FWHA for co-sponsorship
- 16 FHWA planned to take an in-depth look at the systems, delayed due to COVID.
- 17 TC has opportunity to create programs on ventilation, fire detection, etc. with DOT interest.

	Research Project	Stage	Champion	6/25/2019	6/18/2020
1	Thermal comfort requirements for metro and railway station platform areas for normal ventilation	Pre-RTAR	Tom O'Dwyer	Awaiting public comments for SPC 217 for input before proceeding	The standard will be published shortly and public comments have been addressed.
2	Emergency ventilation for alternative fuel and driverless vehicles in a fire scenario in tunnels and parking garages	Pre-RTAR	Duncan Phyfe	FHWA is interested in the topic and is creating a committee. Possible co-sponsorship with FHWA, NFPA Research Foundation. Look at NFPA 2. Look for other paths for co-sponsorship. Focus on ASHRAE relevancy, i.e. vented fires. NRC Canada has been performing research in fire detection and fire fighting of alternative fuel vehicle fires.	PIARC is also looking into alternate propulsion - Peter Sturm – Opportunity for co-sponsorship  Norris Harvey and Ahmed Kashef are corresponding members for PIARC
3	Comprehensive tunnel ventilation systems inspection requirements for NTIS program.	Pre-RTAR	Igor Maevski	Enhancement of NTIS standard for inspection for mechanical and electrical aspects of tunnel ventilation system. Possibility of co-sponsorship from FHWA	Stephen Bartha from FHWA is involved in the tunnel inspection program and attended the meeting – opportunity for co-sponsorship. See meeting notes.
4	LEED requirement/certification for station design based on ASHRAE 90.1	Pre-RTAR	Matt Davy		Mohammad Tabarra original author of previous RTAR. Will work with Matt and Jarrod Alston to resurrect.
5	Review role of Phase 1 Integrated Design of EVS-FFFS in Highway Tunnels – Funding mechanism.	Post-award	David Hahm	Reach out to MORTS	Stephen Bartha is filling in the role of Bill Bergeson for FHWA and attended the meeting. Additional tasks have been awarded. FHWA looking to form review panel with one point of contact from TC 5.9. See meeting notes.
6	Phase 2 for Integrated Design of EVS-FFFS in Highway Tunnels	Pre-RTAR	Igor Maevski	Full scale fire tests – Memorial Tunnel	
7	High Speed Pressure Transients	Pre-RTAR	Andrew Louie	Obtain PSD RTAR to determine if there is relevant information for pressure transients in high speed rail.	Previous RTAR is uploaded on Basecamp.

# TC5.9 PROGRAM SUB-COMMITTEE REPORT

## 2020 Summer Virtual Meeting

### 1. Sponsor programs for this meeting

#### **Seminar 43 - Design Considerations for Tunnel Ventilation Systems**

Jun 22, 2020 Monday 8 am-9am EDT

Track: HVAC&R Systems and Equipment

Sponsored by TC 5.9

1. Tunnel Ventilation Considerations for Diesel Locomotives

Andrew Louie, P.E., Member, WSP, NY, NY

2. Fire Ventilation for Tunnel Occupant Safety Using Coupling Methods between CFD and 3D Egress Modeling

Andre Calado, Member and Robert Faddoul, Jacobs Engineering, NY, NY

3. Framework for Rapid Development of a High-Level Design of a Jet Fan Ventilation System for Road Tunnels

Thomas P. O'Dwyer, P.E., Member<sup>1</sup> and David Hahm, P.E.<sup>2</sup>, (1)McMillen Jacobs Associates, New York, NY, (2)Jacobs Engineering, New York, NY

**Live Q&A Monday, June 29, 2020 9:00 AM - 9:20 AM EDT**

### 2. Future conferences

	Conference paper abstract due	Seminar, Forum proposal due
Chicago, IL, Jan 2021		<b>Aug 3, 2020</b>
Phoenix, AZ, Jun 2021		
Las Vegas NV, Jan 2022		
Toronto, ON, Jun 2022		

- Debate  
1 moderator, 60-90 min, 3-4 panelist, in individual presentations
- Forum  
1 moderator, 60 minutes, no presentations
- Panel  
1 moderator, 60-90 minutes, 3-6 participants, no individual presentations
- Seminar  
2-3 speakers for 60 min or 3-5 speakers for 90 min
- Workshop  
One chair and two presenters (maximum), 60 min long including 30 min presentation and 30 min discussion

### **Chicago** Winter Conference, January 2021

#### **Tracks:**

- HVAC&R Fundamentals and Applications
- Systems and Equipment
- Refrigeration and Refrigerants
- Environmental Health Through IEQ
- Building Performance and Commissioning for Operation and Management

- Energy Conservation
- International Design
- Standards, Guidelines and Codes

**TC5.9 proposed for a 2021 ASHRAE Winter Conference session on Fire Propagation, Fire Detection and Ventilation in enclosed vehicular facilities. Igor is planning to organize and Chair the Conference session with the following three papers:**

1. Fire propagation in rail environment [Lily Liu, Andrew Louie, WSP]
2. Fire detection and ventilation response in rail tunnels [Andre Calado, Jacobs]
3. Fire detection and ventilation response in road tunnels [David Hahm, Jacobs] (Chair : Igor)

### **Future Program Topics**

Can Wireless Control Improve Ventilation Performance (Champion: Steve Presser)

Air Cleaning for Tunnels (Champion: Igor Maevski)

Extreme Events Ventilation Requirements (Champion: Greg Sanchez)

Best Practices for Enclosed Vehicular Facilities (Champion: Tom O'Dwyer)

Tunnel Ventilation Velocity Profile on Egress Calculations (Champion: Ahmed Kashef)

Matrix Development to Achieve LEED Certification in Station Design (Champion: Mohammad Tabarra)

Platform Screen Doors (Champion: Greg Sanchez)

Natural Ventilation Applications in Enclosed Vehicular Facilities (Champion: Mark Colino)

BIM in Tunnel Ventilation Design (Champion: Igor Maevski)

Special Ventilation Issues in High-Speed Rail Tunnels (Champion: Ian Ong)

Boundary Conditions for Tunnel Ventilation Modeling (Champion: Tom O'Dwyer)

Ventilation Design for Road Tunnels Based on Risk Analyses (Champion: Ahmed Kashef)

Perspectives on Design-Build Projects (Champion: Mark Colino)

Timestamp	Username	Full Name	Company	TC 5.9 Membership?	ASHRAE Member?	ASHRAE YEA?
2020/06/12 12:08:16 AM AST	rajesh.dmrcl@gmail.com	Rajesh Jain	Delhi Metro Rail Corporation Limited	Provisional Corresponding Memeber	Yes	No
2020/06/18 8:18:15 AM AST	dphyfe@aldenlab.com	Duncan Phyfe	Alden	TC Voting Member	Yes	No
2020/06/18 9:13:54 AM AST	<a href="mailto:luke.pelessone@mottmac.com">luke.pelessone@mottmac.com</a>	Luke Pelessone	Mott MacDonald	Guest	No	No
2020/06/18 9:19:11 AM AST	J_Greg_Sanchez@comcast.net	Greg Sanchez	NJ Transit	Corresponding Member	Yes	No
2020/06/18 9:37:46 AM AST	LarryS@LI-hvac.com	Larry Smith	Linx Industries	Guest	Yes	No
2020/06/18 9:45:25 AM AST	tj.lyle@greenheck.com	TJ Lyle	Greenheck	Provisional Corresponding Memeber	Yes	Yes
2020/06/18 9:59:00 AM AST	stsvetkova@jmt.com	Simona Tsvetkova	Johnson, Mirmiran and Thompson	Corresponding Member	Yes	Yes
2020/06/18 10:01:04 AM AST	kevin.gildea@howden.com	Kevin Gildea	Howden	Provisional Corresponding Memeber	Yes	Yes
2020/06/18 10:02:45 AM AST	yoon.ko@nrc-cnrc.gc.ca	Yoon Ko	NRCC	TC Voting Member	Yes	No
2020/06/18 10:02:56 AM AST	salvatore.marsico@wsp.com	Salvatore Marsico	WSP	Provisional Corresponding Memeber	Yes	Yes
2020/06/18 10:03:55 AM AST	elias.papadopoulos@amtrak.com	Elias Papadopoulos	Amtrak	Corresponding Member	Yes	No
2020/06/18 10:05:24 AM AST	david.hahm@jacobs.com	David Hahm	Jacobs	TC Voting Member	Yes	Yes
2020/06/18 10:05:55 AM AST	andre.calado@jacobs.com	Andre Calado	Jacobs	Provisional Corresponding Memeber	Yes	Yes
2020/06/18 10:06:02 AM AST	andrew.louie@wsp.com	Andrew Louie	WSP	Corresponding Member	Yes	No
2020/06/18 10:06:09 AM AST	kyle.lopez@mottmac.com	Kyle Lopez	Mott MacDonald	Guest	No	No
2020/06/18 10:06:14 AM AST	baljinder.bassi@kiewit.com	Baljinder Bassi	Kiewit	Guest	Yes	No
2020/06/18 10:06:18 AM AST	norris.harvey@mottmac.com	Norris Harvey	Mott MacDonald	Corresponding Member	Yes	No
2020/06/18 10:06:24 AM AST	kmarples@benzco.com	Kevin Marple	Benz Air Engineering Co..Inc.	Corresponding Member	Yes	No
2020/06/18 10:06:28 AM AST	igor.maevski@jacobs.com	Igor Maevski	Jacobs	Corresponding Member	Yes	No
2020/06/18 10:06:36 AM AST	mohammad.tabarra@arup.com	Mohammad Tabarra	Arup	Corresponding Member	Yes	No
2020/06/18 10:06:50 AM AST	natasha.delosrios@mottmac.com	Natasha de los Rios	Mott MacDonald	Guest	Yes	No
2020/06/18 10:08:27 AM AST	BILL.LAMPKIN@GREENHECK.COM	WILLIAM LAMPKIN	greenheck fan corp	TC Voting Member	Yes	No
2020/06/18 10:08:31 AM AST	mfeuser@clarage.com	FEUSER, MICHAEL JOSEPH	Twin City Clarage	Corresponding Member	Yes	No
2020/06/18 10:10:54 AM AST	dapeth@gmail.com	David Peth	Howden American Fan Company	Provisional Corresponding Memeber	Yes	No
2020/06/18 10:16:55 AM AST	toby.sargant@mottmac.com	Toby Sargant	Mott MacDonald	Guest	No	No
2020/06/18 10:19:35 AM AST	matt.davy@arup.com	Matt Davy	Arup	TC Voting Member	Yes	No
2020/06/18 10:21:34 AM AST	yuan.li@jacobs.com	Yuan Li	JACOBS	Corresponding Member	Yes	Yes
2020/06/18 10:43:14 AM AST	val@nailor.com	VALENTINA NEDELUCU	Nailor Industries Inc	Corresponding Member	Yes	No
2020/06/18 10:50:35 AM AST	cheng1951@yahoo.com	(Kevin) Cheng Chang	Consultant	Corresponding Member	Yes	No
2020/06/18 10:53:05 AM AST	jarrod.alston@arup.com	Jarrod Alston	Arup	Corresponding Member	Yes	No
2020/06/18 10:59:04 AM AST	jkohler9@comcast.net	Jay Kohler	Engineering Consultant	Guest	Yes	No
2020/06/18 12:31:58 PM AST	jmiller@clarage.com	Jane Miller	Twin City Clarage	TC Voting Member	Yes	No
2020/06/18 1:32:02 PM AST	scassady@hntb.com	Sean E Cassady	HNTB Corp	Guest	yes	No
	<a href="mailto:stephen.bartha@dot.gov">stephen.bartha@dot.gov</a>	Stephen Bartha	FHWA	Guest		
	<a href="mailto:OVolker@clarage.com">OVolker@clarage.com</a>	Olivia Volker	Twin City Clarage	Corresponding Member	yes	Yes
	<a href="mailto:david.newman@mottmac.com">david.newman@mottmac.com</a>	David Newman	Mott MacDonald	Corresponding Member	yes	no
		Ahmed Kashef	NRCC	Corresponding Member	yes	no
		Ashesh Raychaudhuri		Corresponding Member	Yes	no
		Dimitry Kogan	PANYNJ	Provisional Corresponding Memeber	yes	no
		Kumaresan Mariappan	AWV	Provisional Corresponding Memeber	Yes	no